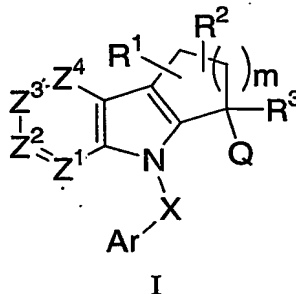


## WHAT IS CLAIMED IS:

1. A compound of formula I:



and pharmaceutically acceptable salts and hydrates thereof, wherein:

Ar is aryl or heteroaryl each optionally substituted with one to four groups independently selected from Rg;

Q is -A-Q';

- 10 A is selected from (1) C<sub>1</sub>-3alkyl optionally substituted with one to four halogen atoms or with one to two CF<sub>3</sub> groups, (2) O(CH<sub>2</sub>)<sub>1-2</sub>, and (3) S(O)<sub>n</sub>(CH<sub>2</sub>)<sub>1-2</sub>;

Q' is selected from COOH, CONR<sup>a</sup>R<sup>b</sup>, C(O)NHSO<sub>2</sub>R<sup>c</sup>, SO<sub>2</sub>NHR<sup>a</sup>, SO<sub>3</sub>H, PO<sub>3</sub>H<sub>2</sub>, and tetrazolyl;

one of Z<sup>1</sup>, Z<sup>2</sup>, Z<sup>3</sup> or Z<sup>4</sup> is N or N→O, and the others are independently selected from CH and C-Rg;

X is selected from -(CR<sup>d</sup>Re)<sub>a</sub>-W-(CR<sup>d</sup>Re)<sub>b</sub>-, phenylene, C<sub>3</sub>-6cycloalkylidene and

- 15 C<sub>3</sub>-6cycloalkylene, wherein a and b are integers 0-1 such that the sum of a and b equals 0, 1 or 2, and W is a bond, -SO<sub>2</sub>-, -C(O)-, -CH(OR<sup>a</sup>)-, -C(O)O-, -C(O)NR<sup>a</sup>-, -CR<sup>d</sup>=CR<sup>e</sup>- or -C≡C-;

R<sup>1</sup> is selected from H, CN, OR<sup>a</sup>, -S(O)<sub>n</sub>C<sub>1</sub>-6alkyl and C<sub>1</sub>-6alkyl optionally substituted with one to six groups independently selected from halogen, OR<sup>a</sup> and -S(O)<sub>n</sub>C<sub>1</sub>-6alkyl;

R<sup>2</sup> is H or C<sub>1</sub>-6alkyl optionally substituted with one to six halogen; or

- 20 R<sup>1</sup> and R<sup>2</sup> together represent an oxo; or

R<sup>1</sup>, R<sup>2</sup> and the atom(s) to which they are attached taken together form a 3- or 4- membered ring

containing 0 or 1 heteroatom selected from NR<sup>f</sup>, S, and O optionally substituted with one or two groups selected from F, CF<sub>3</sub> and CH<sub>3</sub>;

R<sup>3</sup> is H or C<sub>1</sub>-6alkyl optionally substituted with one to six groups independently selected from -OR<sup>a</sup> and

- 25 halogen;

R<sup>a</sup> and R<sup>b</sup> are independently selected from H, C<sub>1</sub>-10alkyl, C<sub>2</sub>-10alkenyl, C<sub>2</sub>-10alkynyl, Cy and Cy-C<sub>1</sub>-10alkyl-, wherein said alkyl, alkenyl, alkynyl and Cy are optionally substituted with one to six substituents independently selected from halogen, amino, carboxy, C<sub>1</sub>-4alkyl, OH, C<sub>1</sub>-4alkoxy, aryl, heteroaryl, aryl-C<sub>1</sub>-4alkyl-, hydroxy, CF<sub>3</sub>, -OC(O)C<sub>1</sub>-4alkyl, -OC(O)NR<sup>i</sup>R<sup>j</sup>, and aryloxy; or

- 30 R<sup>a</sup> and R<sup>b</sup> together with the atom(s) to which they are attached form a heterocyclic ring of 4 to 7 members containing 0-2 additional heteroatoms independently selected from oxygen, sulfur and N-R<sup>f</sup>;

$R^c$  is selected from  $C_{1-6}$ alkyl optionally substituted with one to six halogen, aryl and heteroaryl, wherein said aryl and heteroaryl are optionally substituted with halogen,  $-OC_{1-6}$ alkyl,  $C_{1-6}$ alkyl and wherein said alkyl is optionally substituted with one to six halogen;

$R^d$  and  $R^e$  are independently H, halogen, aryl, heteroaryl,  $C_{1-6}$ alkyl or halo $C_{1-6}$ alkyl;

5  $R^f$  is selected from H,  $C_{1-6}$ alkyl, halo $C_{1-6}$ alkyl, Cy,  $-C(O)C_{1-6}$ alkyl,  $-C(O)$ halo $C_{1-6}$  alkyl, and  $-C(O)-$ Cy;

$RG$  is selected from (1) halogen, (2) CN, (3)  $C_{1-6}$ alkyl optionally substituted with one to eight groups independently selected from aryl, heteroaryl, halogen,  $NR^aR^b$ ,  $C(O)R^a$ ,  $C(OR^a)R^aR^b$ ,  $SR^a$  and  $OR^a$ , wherein aryl, heteroaryl and alkyl are each optionally substituted with one to six groups independently  
10 selected from halogen,  $CF_3$ , and  $COOH$ , (4)  $C_{2-6}$ alkenyl optionally substituted with one to six groups independently selected from halogen and  $OR^a$ , (5) Cy, (6)  $C(O)R^a$ , (7)  $C(O)OR^a$ , (8)  $CONR^aR^b$ , (9)  $ONR^aR^b$ , (10)  $OR^a$ , (11) SH, (12)  $-S(O)_n C_{1-6}$ alkyl, wherein alkyl is optionally substituted with one to six substituents selected from halogen, aryl, heteroaryl, OH, and  $OC(O)R^a$ , (13)  $-S(O)_n$ aryl, (14)  $-S(O)_n$ heteroaryl, (15)  $-NR^a S(O)_n R^b$ , (16)  $-NR^a R^b$ , (17)  $-NR^a C(O)R^b$ , (18)  $-NR^a C(O)OR^b$ , (19)  
15  $-NR^a C(O)NR^a R^b$ , (20)  $-S(O)_n NR^a R^b$ , (21)  $NO_2$ , (22)  $C_{5-8}$ cycloalkenyl; wherein Cy is optionally substituted with one to eight groups independently selected from halogen,  $C(O)R^a$ ,  $OR^a$ ,  $C_{1-3}$ alkyl, aryl, heteroaryl and  $CF_3$ ;

$R^i$  and  $R^j$  are independently selected from hydrogen,  $C_{1-10}$ alkyl, Cy and  $Cy-C_{1-10}$ alkyl-; or

$R^i$  and  $R^j$  together with the nitrogen atom to which they are attached form a ring of 5 to 7 members  
20 containing 0-2 additional heteroatoms independently selected from oxygen, sulfur and  $N-R^f$ ;

Cy is selected from heterocyclyl, aryl, and heteroaryl;

m is 1, 2 or 3; and

n is 0, 1 or 2.

25 2. A compound of Claim 1 wherein Q is  $CH_2CO_2H$ .

3. A compound of Claim 1 wherein X-Ar is  $-(CR^dRe)_a-(CR^dRe)_b$ -aryl,  $-SO_2$ -aryl  
or  $-C(O)$ -aryl, wherein said aryl is naphthyl or phenyl optionally substituted with 1 to 2 groups selected  
30 from  $RG$ .

4. A compound of Claim 1 wherein X-Ar is benzyl or  $\alpha$ -methylbenzyl wherein the  
phenyl moiety is substituted with one to three chlorine atoms.

5. A compound of Claim 1 wherein  $Z^3$  is nitrogen and  $Z^1$ ,  $Z^2$  and  $Z^4$  are  
35 independently selected from CH and  $CRG$ .

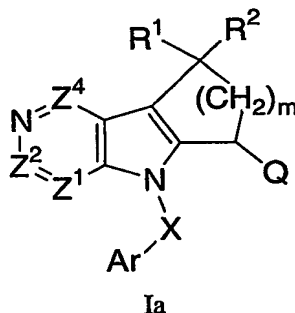
6. A compound of Claim 1 wherein  $Z^3$  is nitrogen and one of  $Z^1$ ,  $Z^2$  and  $Z^4$  is CRg and the others are CH.

7. A compound of Claim 1 wherein  $Z^3$  is nitrogen,  $Z^1$  is C-SO<sub>2</sub>-C<sub>1-3</sub>alkyl,  $Z^2$  and  $Z^4$  are each CH.

8. A compound of Claim 1 wherein m is 1 or 2.

9. A compound of Claim 1 wherein  $R^1$ ,  $R^2$  and  $R^3$  are each hydrogen, or  $R^1$  and  $R^2$  together is oxo, and  $R^3$  is hydrogen.

10. A compound of Claim 1 having the formula Ia:



wherein Ar, Q, X,  $Z^1$ ,  $Z^2$ ,  $Z^4$ ,  $R^1$ ,  $R^2$  and m are as defined in Claim 1.

11. A compound of Claim 10 wherein Q is CH<sub>2</sub>CO<sub>2</sub>H.

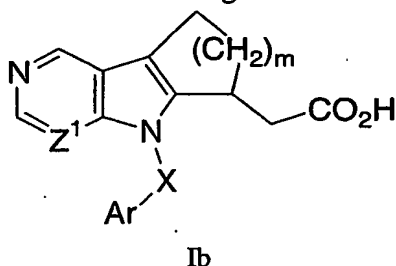
12. A compound of Claim 10 wherein X is CH<sub>2</sub> or CH(CH<sub>3</sub>).

13. A compound of Claim 10 wherein Ar is phenyl optionally substituted with one to three groups selected from Rg.

14. A compound of Claim 10 wherein Ar is phenyl optionally substituted with one to three halogen atoms.

15. A compound of Claim 10 wherein  $Z^2$  and  $Z^4$  are each CH.

16. A compound of Claim 1 having the formula Ib:



wherein  $Z^1$  and  $m$  are as defined in Claim 1; Ar is phenyl optionally substituted with one or two R<sub>g</sub> groups, and X is CH<sub>2</sub> or CH(CH<sub>3</sub>).

17. A compound of Claim 16 wherein  $Z^1$  is C-SO<sub>2</sub>-C<sub>1-3</sub>alkyl.

18. A compound of Claim 16 wherein Ar is phenyl substituted with one or two halogen atoms.

19. A compound of Claim 16 wherein  $Z^1$  is C-SO<sub>2</sub>-C<sub>1-3</sub>alkyl and Ar is phenyl substituted with one or two halogen atoms.

20. A pharmaceutical composition comprising a compound of any one of Claims 1 to 19 and a pharmaceutically acceptable carrier.

21. The composition of Claim 20 further comprising a second active ingredient selected from an antihistamine, a leukotriene antagonist and a leukotriene biosynthesis inhibitor.

22. A method for the treatment of prostaglandin D<sub>2</sub> mediated diseases or conditions which comprises administering to a patient in need of such treatment a therapeutically effective amount of a compound of Claim 1.

23. A method of Claim 22 wherein said prostaglandin D<sub>2</sub> mediated disease or condition is selected from nasal congestion, allergic rhinitis, asthma and flushing induced by niacin.

24. Use of a compound of formula I, as defined in any one of Claims 1 to 19, or a pharmaceutically acceptable salt or hydrate thereof, in the manufacture of a medicament for treatment of prostaglandin D2 mediated diseases or conditions.

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25. A compound of formula I, as defined in any one of Claims 1 to 19, or a pharmaceutically acceptable salt or hydrate thereof, for use in medical therapy.

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26. A compound salt or hydrate as defined in Claim 25 for use in treatment of a condition selected from nasal congestion, allergic rhinitis, asthma and flushing induced by niacin.

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27. A prostaglandin receptor antagonist pharmaceutical composition comprising an acceptable antagonist amount of a compound of formula I, as defined in any one of Claims 1 to 19, or a pharmaceutically acceptable salt or hydrate thereof, in association with a pharmaceutically acceptable carrier.